OUTLINES

OF A

NEW SYSTEM OF PHYSIOLOGY,

BY

LOUIS MACKALL, M. D.

SURGEON GENL'S OFFICE
P.V.96.
LIBRARY
SURGEON GENL'S OFFICE
12098.
LIBRARY

"Non alius fere sit aditus ad regnum hominum ut fundatur in scientiis, quam ad regnum Cœlorum in quod, nisi sub persona infantum intrare non datur."

"Nay, it is a point fit and necessary in the front and beginning of this work, without hesitation or reservation to be professed, that it is no less true in this human kingdom of knowledge, than in God's kingdom of heaven, that no man shall enter into it except he become first as a little child."

BACON'S WORKS.

Surgeon Genl's Office
LIBRARY
12098
Washington D.C.

WASHINGTON CITY:

THEODORE BARNARD, PRINTER.

1848.

Entered according to Act of Congress, in the year 1848,
By Lewis Mackall,
In the Clerk's Office of the District Court of the District of Columbia.

ADVERTISEMENT.

The object of the following Treatise is to call attention to certain general laws or Laws of Nature, relating to Physiology, which have heretofore escaped observation.

For this purpose a rough sketch, or outline, as it were, of human Physiology is given, that the application of those general laws may be seen; but that the propositions in which they are stated may not be supposed to be conjectural, I would remark that they have been patiently studied out and traced up, step by step; and are founded on observation and experiments, carefully conducted through a space of more than fifteen years.

I propose at some future time to call attention to them separately, in connection with the instances, facts, and reasoning on which they are founded.

Some may be curious to know how the conclusions were arrived at, or what process was adopted in investigating these general laws.

Lord Bacon professed to have discovered a rule which he termed the "Inductive Method," by means of which any one, of ordinary intellect, would be enabled to find out such laws or general truths; but the specimens he has himself given of the application of his rule are not calculated to give an exalted opinion of its importance. An account of the process adopted in our investigations, is furnished by a writer who was possessed of an intellect no way inferior, in my opinion, to that of Lord Bacon. Bishop Butler in his "Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature," thus remarks: "How capricious and irregular a way of information, it would be said, is that of Invention, by means of which Nature instructs us in matters of science, and in many things upon which the affairs of the world greatly depend; that a man should, by this faculty, be made acquainted with a thing in an instant, when, perhaps, he is thinking of somewhat else, which he has in vain been searching after—it may be, for years. . . . And as it is owned the whole scheme of Scripture is not yet understood, so if it ever comes to be understood

before the restitution of all things, it must be in the same way as natural knowledge is come at; by the continuance and progress of learning and of liberty, and by particular persons attending to, comparing and pursuing, intimations scattered up and down it, which are overlooked and disregarded by the generality of the world. For this is the way in which all improvements are made; by thoughtful men tracing on obscure hints, as it were, dropped by Nature accidentally, or which seem to come into our minds by chance. . . . For all the same phenomena and the same faculties of investigation, from which such great discoveries in natural knowledge have been made in the present and last age, were equally in the possession of mankind several thousand years before."

August, 1848.

OUTLINES

OF A

NEW SYSTEM OF PHYISIOLOGY.

(1.) In considering the phenomena which are the subject of human physiology, the first thing that arrests the attention is this: That man is composed of two distinct beings—the one material and finite, the body; the other, the mind, or soul, which is immaterial and immortal.

(2.) The immaterial being or mind of man is endowed by the Author of Nature with certain faculties, and on it are impressed certain instincts, propensities, or dispositions, from which originate all his wants and desires; but those wants or desires are restrained by the laws of Nature, and by moral and human laws.

(3.) One of the faculties of the human mind is called Reason; by means of which man is enabled to find out the laws of Nature, or those laws which the Author of Nature has established for the government of the world.

(4.) The material world, or all forms of matter, may be resolved into one simple elementary substance; this elementary substance,—a subtile fluid,—which, it will be found convenient to call LIFE.*

In using this term we may state, once for all, that we shall employ it in the same way as the term heat is commonly employed, that is, to express a variety of forms and conditions of the same thing. Our meaning, however, will be understood from the context.

(5.) The great law of the material world is this; that among all the variety of objects in the universe, whether animate or inanimate, there is a constant interchange of this subtile fluid, Life. This will appear as we proceed.

(6.) The life received from surrounding objects by animals, is disposed of in various ways; a portion of it directly, by means of the will, the remainder indirectly, or through the intervention of some other agent.

(7.) The human body may be divided into two distinct kinds of structure or tissues—the Nervous tissue, and the fibrous tissue.

(8.) Life is transmitted or circulates through the body through the medium of the Nervous tissue, or nerves.

(9.) Motion is produced in the living body by the agency of the fibrous tissue, which comprehends the several kinds called the muscular, tendinous, membranous, and osseous tissues.

* See note [1] at the end.

(10.) The nervous system may be regarded, in a general way, as being composed of a centre called the Cerebro-Spinal Centre, and threads, or loops passing to and from the different fibres constituting the fibrous tissue; one side of the loop conducting the nervous fluid, or peculiar life of the animal *from the centre* to the fibre, called the efferent nerve, and the other side of the loop conducting this fluid from the fibre *to the centre*, and called the afferent nerve.

(11.) The action of the living fibre is dependent for its exciting cause on the nervous fluid transmitted to it from the nervous centre through the efferent nerve; and *this action consists in extension. The contraction of the living fibre is caused by having the nervous fluid or its cause of action conducted away from it towards the nervous centre by the afferent nerve.*

(12.) The different kinds of fibre differ from one another in the extent of their action, but this difference seems generally owing to the greater or less supply of nervous filaments.

(13.) The organs of which the body is composed may be divided into the solid organs, comprising the voluntary muscles, the bones, &c., and into the hollow organs or tubes.

(14.) The Functions of those organs have been divided into those of nutrition, of relation, and of generation.

FUNCTIONS OF NUTRITION.

(15.) The functions of nutrition are carried on in the tubes, or hollow organs, which are composed of fibres placed about their walls—some longitudinally, some circularly, and others obliquely; so that by the extension or elongation of those fibres their calibre is increased, and by the contraction of the fibres, their calibre diminished.

(16.) There are four stages of nutrition; in the first stage, commencing at the mouth and extending along the tube called the primæ viæ, the nutriment is converted into chyme; in the second stage, embracing the lacteals, the receptaculum chyli and the thoracic duct, the chyme is converted into chyle; in the third stage called the circulation of the blood, the chyle is converted into that fluid, and in the fourth stage, the vessels of the glands, the blood is converted into the secretions.

(17.) All these changes in the form of the nutriment, as it passes along, are effected by means of the nervous fluid or life of the animal; for throughout its whole progress this fluid is continually conveyed to it, and an increased supply as continually reconveyed from it to the nervous centre; and this increased supply of life is the end or object of nutrition.

(18.) Another function of the tube engaged in nutrition is the conveying along its contents, and this act is performed in different ways in the several stages we have spoken of; in the primæ viæ the action of the tube is limited to a small extent at a time; in the circulation of the blood, the action of the arteries takes place throughout their whole extent at the same moment, &c.

(19.) It has been said, (11) the action of the living fibres consists in extension, and if we bear in mind the arrangement of the fibres about the walls of the tubes, it must be admitted that the action of the tubes consists in dilation, and, consequently, if their contents are conveyed along by the action of those organs, it must be by the power of suction and not that of propulsion, as is commonly supposed.

(20.) To give a more detailed account of the first stage of nutrition or digestion as it is termed, a portion of food is taken into the mouth which we will call the first step of its progress, and being masticated and mixed with the saliva, undergoes a change by which it is prepared to enter the Pharynx, which may be regarded as the second step. The changes in the nutriment we have said are effected by means of the nervous fluid, and this is conveyed to the food in the mouth through the nerves of the teeth and walls of the mouth, and through the saliva, which we shall see contains a large amount. The nervous fluid having been thus intimately mixed with the food, it becomes changed in its nature—becomes partially vitalized—and gives off in its turn a fluid which goes to the nourishment of the animal. It is returned directly to the nervous centre by the afferent nerves of the teeth and walls of the mouth, and a part of it is mixed with a fluid which is taken up by the absorbents of the mouth. Thus it may be seen that digestion commences in the mouth, and in some sapid substances it is nearly completed in this first step.

(21.) A morsel of the food prepared, as we have seen, in the mouth, is presented to the Pharynx and excites it into action. This action, consisting in dilatation (19) the morsel is drawn along, as it were; the same thing occurs along the Œsophagus. The action of this tube being limited to a small extent at a time, gives it the appearance as if a ball were passing along its course. The progress of the morsel is not entirely owing to suction, but is assisted in some measure by the passive contraction of the tube immediately behind it.

(22.) In the Pharynx and in each subsequent step the same thing occurs as in the mouth—the same changes and the same interchange of life—so that when digestion is completed, the residue or fæces are composed almost entirely of the secretions of the animal.

(23.) The extent of the action at any one time of the tube in the second stage of nutrition has not been observed, but it is supposed the action of the Lacteals, of the Receptaculum Chyli, and the Thoracic duct occur at different intervals.

(24.) Before we can explain the third stage of nutrition, called the Circulation of the Blood, it will be necessary to notice the structure of the Heart, and of the other tubes through which the blood flows.

(25.) The Heart is a tube, or hollow organ, having thick walls composed mainly of muscular and tendinous fibres arranged as in the other tubes—so that by their extension its calibre is increased, and by their contraction, diminished. It is divided into four chambers or compartments, two called Auricles, receiving the blood from the veins and two Ventricles, which receive the blood from the Auricles. At the entrance from the auricle to the ventricle, membranous fibres are

thrown out so as to form valves, which, when extended, close up the passage, and thus limit the quantity of blood going into the ventricle at one time. In addition to this arrangement, bundles of muscular fibres stand out from the sides of the ventricles, and terminating in tendons are inserted into the tips or free edges of the valves; and by their extension assist materially in closing the passage—the bundles of muscular fibres are called Columnæ Carneæ, and their tendons Chordæ tendineæ.

(26.) The arteries have the same arrangement of fibres about their walls, and their entrance is guarded simply by valves.

(27.) The Capillaries are minute vessels receiving the blood from the Arteries and have the same size throughout; their action is not understood, but it is said the flow of blood in them is constant and equable, and not in jets as in the arteries; they communicate freely with one another and have no valves.

(28.) The blood passes from the Capillaries into the veins, and flows in them also in a constant and equable course. The veins have valves projecting at irregular intervals from their walls, which are intended, no doubt, to prevent excessive accumulations of blood in any part of its course.

(29.) A supply of blood having been collected from the veins of the system, generally, into the right auricle of the Heart, is received into the right ventricle; which is dilated for the purpose by the action of its fibres. Having received its due quantity, any further supply is cut off by the action of its valves. It is next received by the Pulmonary Artery and conveyed to the Lungs; here it undergoes a striking change, but similar in its nature to what has been taking place all along, that is, it gives off a portion of its life to, and receives a portion in its stead from, the Atmosphere. By this change the blood is again prepared to enter on its course; it is received by the Pulmonary vein, and conveyed to the left auricle of the Heart. The left ventricle receives it from the left auricle, and has its supply limited by valves, Columnæ Carneæ, and Chordæ tendineæ, as in the right ventricle. The arteries of the general system then receive it from the left ventricle, the supply limited again by the valves at the entrance, and convey it to the Capillaries, which, in their turn convey it to the veins of the general system, whence it was first derived.

(30.) The veins coming from some of the abdominal viscera, unite into one large trunk which enters the liver. This vein, called the Vena Portarum, takes on an action similar to that of the arteries, that is, it is actively dilated, and to enable it to do this, it is surrounded throughout its course by a loose cellular structure called the Capsule of Glisson.

(31.) The Blood in its course, is continually giving off and receiving life, as in the first stage of nutrition, and as the nutritious matter become vitalized and passed into another set of vessels, the Lacteals, so a portion of the blood in its passage through the arteries becoming more vitalized passes into a set of vessels peculiar to the glands and forms the secretions.

(32.) A large supply of the life or nervous fluid of animals is derived from the secretions, which are in some instances stored up as it were, for use, in bladders or receptacles. The gall-bladder, the urinary bladder, and vesiculæ seminales are instances of such receptacles.

(33.) A portion of the blood in its passage through the Capillaries, is converted by the action of the nervous fluid into the solids, and again the solids which have performed their office in the economy, are resolved into blood and pass along into the veins.

(34.) Mechanism of Respiration.—From the position of the muscles—the Diaphragm, as well as the intercostal muscles—it will be readily understood how the chest is dilated or expanded by the extension or active state of those muscles, and contracted by their opposite state.

(35.) The Lungs are sacks or bladders composed of membrane or membranous fibres, which, by their extension expand these organs, and by their contraction compress them ; but these movements of the lungs in the higher orders of animals are assisted by the movements of the chest, which are synchronous.

(36.) The view we have now taken of the proper function of the lungs is clearly confirmed by what is observed in the respiration of a lower order of animals. In the Chelonia, or terrapins, for instance, the parts corresponding to the ribs and sternum in the higher orders, are fixed and immovable ; their lungs are attached loosely to the upper shell or Carapax, and are expanded and contracted without the assistance of the corresponding movements of the chest. Respiration is carried on in these animals precisely as in the higher orders, notwithstanding the ridiculous notion entertained by Naturalists that their lungs are expanded by having the air forced into them by the action of the upper jaws. We would also refer to the respiration of the Batrachia or Frogs.

FUNCTIONS OF RELATION.

(37.) The Functions of Relation are performed by what we have called the solid organs of the body—the voluntary muscles, bones, &c. The bones constitute the frame-work, as it were, of the animal ; and the muscles and tendons are bundles of straight fibres stretching from one point of this frame to another ; and by their elongation and contraction they effect the movements of the body.

(38.) Voluntary Motions.—The muscles, by the agency of which voluntary motion is effected, being attached as we have seen, are confined in their action to the movement of the bones upon one another ; and for this purpose two sets of muscles are destined for each of those movements.

(39.) In order to simplify our explanation, we will confine our attention to the movements of the fore arm upon the humerus, and we will call the set of muscles which are supposed to bend the arm the

biceps muscle, and the set which are supposed to straighten the arm the triceps muscle.

(40.) We have said (10) the Nervous System was composed of loops passing from a centre to the different fibres of the body, and returning again from those fibres to the centre; that one side of the loop carried the nervous fluid from the centre to the fibre, and the other side of the loop brought the fluid from the fibre to the centre. We have also said (11) the action or active state of the fibre consisted in extension; in other words, when the nervous fluid was carried to a fibre it was extended, and when brought from a fibre it was contracted. From this view of muscular action it will be seen that the term flexor when applied to the biceps muscle, and that of extensor, when applied to the triceps muscle are misapplied, and their operation misapprehended; for the action of the biceps muscle, that is, its extension, must tend to straighten out the fore arm, and not to bend it on the humerus, and the action or extension of the triceps muscle, inserted as it is in the Olecranon process, must have the effect of bending the fore arm, and not that of straightening it out.

(41.) The correctness of this view is best seen in strong or forcible actions of the muscles. In straightening the arm out forcibly,—for instance in striking a hard blow with the fist,—we may be conscious that the biceps muscle is in action, or in drawing a resisting body towards us, we may be conscious that the triceps muscle is in action.

(42.) But let me not be misunderstood; I do not intend to assert that the bending of the arm is wholly attributable to the extension of the triceps muscle, for it is equally attributable to the contraction of the biceps muscle. In all the movements of the body, where there are two sets of muscles engaged, the movement is the result of the extension of one set, and of the contraction of the other. Nay, in slight or gentle movements, I am willing to admit that they are effected by the contraction in one of the sets of muscles almost exclusively. But the point I insist upon is this, and it is a point of the greatest importance, that the contraction of a muscle is not its state of action, but, on the contrary, is a passive state; the action, in the movements of which we are speaking, is in the afferent nerve and nervous centre, which withdraw the nervous fluid from the contracting muscles.

(43.) The misapprehension of the function of muscles, which has existed so long, seems to me to have taken its rise from the fact that a muscle when contracted has its substance collected together, as it were, in some part of its extent, and, consequently, enlarged at that part; all the movements of the body being effected by two sets of muscles, this enlargement in one set has attracted attention exclusively. The condition of the other set, which are in an active state, and consequently have their substance diffused or extended by the operation of the nervous fluid, has escaped observation.

(44.) The account we have given of the movements of the

fore arm, and of the function of the muscles engaged in those movements, is equally applicable to the other movements of the body. In explaining the phenomena observable in walking, running, dancing and leaping, we should bear in mind that the muscles which are in action are extended, and the contraction a passive state of the muscles, superinduced by the withdrawal of the nervous fluid.

(45.) Of the Senses.—We have said (4) that all forms of matter are but modifications of the subtile elementary fluid—life. Light, Heat, Sound, Odors and Savors are but forms of life, and the nerves of the senses are adapted to receive and act upon those forms—the nerves of each sense being suited to its peculiar form of life—those of the eye to light, the nerves of the ear to sound, &c. But the nerves of the senses cannot act unless the nervous fluid of the animal to which they belong is determined to them.

(46.) Animal Heat, Sounds, Light.—As animals receive different forms of life, so their peculiar life or nervous fluid is given off in different forms, as in animal heat, the voice and sounds of various animals and in the light given off by some of them, as the fire-fly, &c.

FUNCTIONS OF GENERATION.

(47.) The Male Organs of Generation.—To understand correctly the function of the Penis, termed erection, it is best to consider it as a muscle arising from the ossa ischii, and terminating in the glands, with its fibres not extending from one extremity to the other, but divided into short sections, and so arranged that by their extension the organ is not only elongated, but has its diameter increased. By taking this view of it we may see that erection is not caused by the injection of the blood into its vessels, which is merely incidental, but by the determination of the nervous fluid to its fibres.

(48.) The tubular part of the Penis is constructed as other tubes; its action in transmitting the semen is similar to that of the arteries—the semen is discharged in jets.

(49.) The Testicles furnish a beautiful specimen in which to observe the length of the vessels in a gland, and consequently the extent of surface on which the circulating fluid is subjected to the influence of the nervous fluid, and thus converted into a highly vitalized secretion.

(50.) The Female organs of Generation may be considered as consisting of a tube extending from the external parts to the extremity of the Fallopian tubes; and of the glands called the Ovaries.

(51.) The male semen is deposited in this tube and conducted along its course, as the contents of other tubes, to its extremity, where it comes in contact with the product of the ovaries—the vesicles; and they are prepared by the action of the semen to enter the tube and be

carried back to the uterus, where the changes occur which are observed in the fœtus in utero-gestation.

(52.) The first portion of the abovementioned tube composed of the labia, nymphæ, vagina, and uterus, is capable, when in a state of action, of a remarkable degree of expansion or dilatation, and it is a most astonishing circumstance that Physiologists have always regarded this dilitation of those organs not as the active state, but as a state opposed to action, and term it a state of relaxation.

(53.) The process of Parturition is simply this. The fundus and body of the uterus having continued in a state of action the allotted time, the nervous fluid is transferred successively to its neck, to the Os Tincæ, to the vagina, and to the external parts; all these parts become dilated, as their cause of action is determined to them, and the fœtus passes along, assisted in its progress, no doubt, by the contraction of the abdominal muscles, and by the contraction of that portion of the tube from which it has passed. [2.]

(54.) The functions of the urniary organs of both sexes, are the same; the urine is discharged by means of the active dilatation of the urethra and the passive contraction of the bladder.

(55.) In concluding this hasty and very imperfect sketch of Physiology, I beg leave to say that, the views therein contained, have not been taken from books; nor were they suggested by any thing derived from that source. They are conclusions fairly drawn, as I conceive, from facts which have happened to come under my own immediate observation.

NOTES.

[1.] As all forms of matter may be resolved into one elementary substance, so the combinations simply, of this elementary substance may produce any form of matter. For instance:

Wheat when ground, assumes a new form; it is not the mechanical division only which constitutes flour; for if the grain be examined, a very small part of it has even the appearance of flour; but in the process of grinding, the interior of the grain or berry, acquires a quantum of life which gives it its peculiar character. Again—the flour being mixed with water, and being kneaded, acquires another quantum of life, and assumes a new form—that of dough; dough when baked, acquires another quantum of life, and becomes bread; if the bread be leavened, it undergoes an intermediate change of form.

Another instance: Corn is given as food to a cow; it undergoes various changes of form in the process of digestion, &c., and finally assumes that of milk; the milk placed under favorable circumstances, acquires a quantum of life and assumes two different forms; one of them, the cream, in the process of churning, acquires a quantum of life, and becomes butter; butter when salted, assumes a new form, and becomes palatable to man, and this form, if placed in a condition in which its life, that is, its life of composition, is not suffered to pass away from it, may continue for an indefinite space of time. But if not placed in such condition, another series of changes takes place in consequence of the loss of its life of composition; it becomes rancid, &c. &c., and finally all its life of composition passes to the atmosphere and to surrounding objects, when it ceases to exist.

[2.] Protracted Parturition.—In the foregoing short treatise, I have contented myself with pointing out some new principles of Physiology, and applying them, in a very general way, in explaining some of the functions, of the animal economy. I have not applied those principles to Pathology, because that did not come within the scope of this paper; but I may be allowed, here to point out their application to one most interesting class of cases, in the issue of which, perhaps more than in that of any other class, the happiness or unhappiness of mankind is involved—I mean the cases of Protracted Parturition. Having taken the above simple view of the process of Parturition, I was called, in the Spring of the year 1835, to see a patient who had been in labor more than twenty-four hours. The pains, tolerably strong at first, had passed off, and the patient left, with the labor very slightly, if at all advanced, in that peculiarly anxious and excited state which we have all witnessed in such cases—the os uteri but partially dilated—the fundus or upper part of the uterus, distended and pressed high up in the abdoman. I reasoned with myself thus: "This condition of the uterus is owing to preternatural action in its fundus and body. The cessation of the pains may be accounted for in this way: The nerves of the organ being largely developed for the purposes of its economy, when the fibres, muscular, and tendinous of the uteras cease to act, they are passively contracted, and press on those nerves, and thus induce pain; when these fibres are in a state of action, they are extended; the pressure is thus removed from the nervous filaments, and the pain ceases. The first indication then is, to subdue the preternatural action in the fundus and body of the uterus. If I can effect this, the passive contraction of the fibres will press the contents of the uterus down against its neck and mouth—this pressure will cause an action in the fibres, of those parts, or to speak more definitely, will cause a determination to them, of the nervous fluid, and the neck and os tincæ will be dilated. In proportion as the nervous fluid is diverted from the fibres of the fundus to those of the neck, the former will passively contract, and the labor be promoted. Again—the action will naturally be transferred from the os tincæ, to the vagina and external parts, and this transfer can be promoted by the introduction of the hand."

This theory was immediately reduced to practice. As the most efficient means of subduing inordinate action that occured to me at the moment, I order-

ed a bowl of pounded ice—it was brought, and I stood by the patient and made her swallow a spoonful at a time in rapid succession. She took it greedily; the anxiety of countenance and excited state of the system, passed away, and when she had taken a little more than half a pint of the ice, the pains returned strong and efficient—the mid-wife who was present, was directed to assist her, and the woman was speedily delivered. The after-birth soon came away, and no unpleasant consequences ensued. I have frequently used the ice under similar circumstances, and always with the same result.

But, that the reader may not have to depend solely on my assurances, I will append the testimony of three physicians of high standing in the profession, and who are now extensively engaged in practice.

The following letter was addressed by me to the writers of the several answers to be found below:

GEORGETOWN, D. C., *March* 8, 1848.

DEAR SIR:—You may have observed in the National Intelligencer within the last few days, a circular signed by Dr. L ——, of Washington, as chairman of a committee which had been appointed by the National Medical Convention, for the purpose of inquiring into any recent improvement in the obsterical department of medicine.

The circular referred especially to the use of Chloroform, and seemed to have been published, at the time it was, in consequence of a notice in the same paper a day or two previous, of one or two cases in which it had been used in this town.

Since the publication of this circular, however, I have observed several cases reported, wherein the use of this remedy has been followed by instantaneous death—admitted by the attendants, to have been caused by the Chloroform. Its use being attended with so much hazard, it can probably never be introduced into general practice.

Now, I think the present would be a favorable opportunity for introducing to the notice of the profession, a remedy in suspended labor, which I made use of in the Spring of 1835, and the success of which, I mentioned at the time, to my acquaintances—to yourself among others.

Without reference to any theory whatever, on this subject, I propose to state to Dr. L———, the simple fact that, in cases of suspended or protracted labor, pounded ice had been swallowed freely, and immediately the pains had returned, the uterus had contracted strongly, and the labor was speedily completed. And further, that there could be no doubt after the number of instances in which it had been tried, that the use of the remedy and the advancement of the labor stood in the relation of cause and effect.

I think you have mentioned to me that you had used this remedy in your practice, and had observed its effect. Will you do me the favor to state the result of your observation on this subject? I do not wish you take the trouble to report any case in detail, but merely to state your general impression as to the effect of the remedy, and the extent to which it has been tried.

Some means of producing uterine contraction without impairing or interrupting materially the other functions, is undoubtedly a most important desideratum in medicine, and as the ice appears to have that effect, I think it is entitled to a fair trial, that its merits or demerits may be fully tested. It is simply with this view that I wish to suggest it to the committee.

Yours truly,
LOUIS MACKALL.

NOTTINGHAM, *March* 17, 1848.

DR. LOUIS MACKALL,

Dear Sir:—I take this, the first moment of leisure, to acknowledge the receipt of yours of the 8th inst., which I hope may be in time for your purposes.

I have, since 1835, the period referred to in your letter, been in the habit of using pounded ice in cases of suspended, as well as protracted labor, the conse-

quence of insufficient or irregular action of the uterus, with signal success. There is not at this time within my recollection, a single case in which it has been *freely* used, that the uterus has not speedily responded, and safe delivery been effected without, in my experience, (not small) any ill consequences resulting to the mother or child.

It may be objected that the term freely, used above, is too vague and indefinite. I therefore state that I am in the habit of giving a tumbler full at a time, and repeating as circumstances demand. I remark that, to ensure the effect here attributed to it, it must be liberally used.

Very truly, your friend,
JOHN M. S. MACCUBBIN.

MANSFIELD, *March* 15, 1848.

DR. LOUIS MACKALL,

Dear Sir :—In your letter of the 8th inst., which I did not get until yesterday, you desired me to state to you the "result of my experience with the internal use of pounded ice in suspended or protracted labor."

For the last ten or twelve years, I have prescribed that article in all cases of suspended or too feeble action, and have never been compelled to resort to any other means to bring about efficient uterine contraction. Indeed, I think there can be no doubt, it does exercise a powerful influence in shortening labor, and thereby materially lessening the sufferings of the patient. This fact has become to be so generally believed here, that all our midwives give the ice in tedious labors.

Truly yours, &c.,
J. H. SKINNER.

CALVERT COUNTY, *April* 4, 1848.

DR. LOUIS MACKALL,

Dear Sir :—In yours of last month, you request me to give you the result of my observations with the use of ice as a promoter of uterine contraction. I do so most cheerfully. My experience, as you know, extends back over a space of some twelve years. During that time, I have had frequent opportunities of observing its effects, and I can safely declare that in no single instance, have I been disappointed in its action. I have used it under a variety of circumstances, and always with the most satisfactory results. In cases where labor-pains had been suspended for twelve or twenty-four hours, they have been renewed *promptly* and efficiently. In cases of inevitable abortion, where the uterine contractions are feeble and inefficient, and where hemorrhage is considerable, I regard it as invaluable.

In retention of the placenta from imperfect contraction of the uterus, and in cases of alarming hemorrhage after delivery and expulsion of the after-birth, it is equally applicable. In short, wherever the firm contraction of the uterus is desirable, that object will most certainly be attained by the administration of ice. Such is the result of my experience with the use of ice as a promoter of uterine contraction. And allow me to add that, in no instance, have I witnessed the slightest ill effect from its administration. My own experience is amply born out by that of several other practitioners in my neighborhood, particularly, Dr. B. Carr, of Friendship, who is more extensively engaged in obstetrical practice, than almost any country practitioner of my acquaintance. In conclusion, allow me to acknowledge, publicly, my indebtedness to you, for what I really think the greatest improvement which has been made in obstetrical practice in the nineteenth century.

Yours truly,
R. MACKALL.